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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,134	08/22/2003	Tapantosh Chakrabarty	2001.057	8890

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EXAMINER	
SINGH, PREM C	
ART UNIT	**PAPER NUMBER**
1764	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/646,134	CHAKRABARTY ET AL.	
	Examiner	Art Unit	
	Prem C. Singh	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *4,5 and 7-9* is/are allowed.

6)☒ Claim(s) *1-3 and 11-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 7 is objected to because of the following informalities:

Claim 7 depends on a cancelled claim (6).

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 10-11, and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sankey et al (Bitumen Utilization via Partial Upgrading and Emulsification, Proceedings of Fueling for a Clean and Safe Environment, Unitar International Conference on Heavy Crude and Tar Sands, February 12-17, 1995, Houston, Texas, Page 269-276).

Claim 1.

Sankey invention discloses, "In the PPU (Phased Partial Upgrading) concept, bitumen is separated into a lighter overhead fraction and a heavier bottom fraction. The bottom fraction is emulsified to be used as a fuel." (Page 269, column 2, paragraph 3).

The steps involved in splitting bitumen into two fractions are given by Sankey in Figure 1 (Page 270) as follows:

(a) Diluted bitumen is taken to atmospheric distillation followed by vacuum distillation. Sankey also discloses, "Bitumen is pipelined to the refineries after dilution with gas plant condensate." (Page 269, column 2, paragraph 4).

(b) "The heavier residual fraction from the vacuum distillation unit is converted into a 70:30 oil-in-water emulsion for use as a fuel (Page 269, column 2, paragraph 6).

Although Sankey uses atmospheric and vacuum distillation units, it would have been obvious to one skilled in the art at the time the invention was made to modify Sankey invention by replacing atmospheric and vacuum distillation units by two flash separation units because both serve the same purpose and expected to give the same results absent any evidence of criticality.

Claims 2 and 3.

Sankey invention uses a wide-cut (93-510°C) fraction of the PPU overhead stream (Page 270, last paragraph and page 271, paragraph 1). Obviously, the heavier fraction has boiling point more than 510°C.

Claims 10 and 11.

Sankey discloses, "The heavier residual fraction from the vacuum distillation unit is converted into a 70:30 oil-in-water emulsion for use as a fuel (Page 269, column 2, paragraph 6).

Claim 13.

Sankey discloses in figure 2 a schematic diagram of the emulsification unit. Accordingly, (a) and (b): heated feed, water, and surfactant are mixed in the 1st stage static mixer, and (c) quench water is added and mixed in the 2nd stage static mixer (see figure 2, page 272). Cold water quench cools and dilutes the emulsion below 100°C (Page 272, column 1, paragraph 2).

Claims 14 and 15.

Sankey discloses that the emulsion has a median droplet size of only 5 μm, (Page 273, column 1, last paragraph).

Claim 16.

Although Sankey invention discloses water content in the emulsion (30%), it does not specifically mention the amount of water added in the quench step separately.

Since water is being added to the process in the emulsion and quench steps sequentially, it would have been obvious to one skilled in the art at the time the invention was made to modify Sankey invention and add equal amounts of water in the two steps to simplify the process and make it easier for data recording.

Claims 12 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sankey in view of Wu et al (US Patent 4,119,149).

Claim 12.

Sankey discloses that the heavier residual fraction from the vacuum distillation unit is converted into a 70:30 oil-in-water emulsion for use as a fuel (Page 269, column 2, paragraph 6). Sankey invention also discloses combustion characteristics (Page 273, column 2, paragraph 3) and use of bitumen emulsion as a fuel in a boiler (Page 276, column 1, paragraph 1). But the invention does not specifically mention about using the steam from the boiler for bitumen recovery from an underground reservoir.

Wu discloses the use of injecting steam to produce bitumen and related petroleum hydrocarbons from underground reservoirs (Column 1, lines 16-22).

Thus, it would have been obvious to one skilled in the art at the time the invention was made to combine Sankey, Tipman, and Wu inventions by taking steam generated in the Sankey invention and using it for bitumen recovery as disclosed by Wu invention for an enhanced recovery of the underground bitumen.

Claim 17.

All the limitations of claim 17 are considered under claims 1 and 12. Thus, combined teachings of Sankey, and Wu fully disclose claim 17.

Allowable Subject Matter

Claims 4, 5, and 7-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

A process for splitting bitumen using a gas plant diluent as claimed under claim 1, with further limitations of claims 4, 5, and 7-9, is not taught or fairly suggested in the prior art.

Response to Arguments

It is to be noted that the new rejection does not use Tipman, and therefore, Applicant's arguments based on Tipman are moot.

The Applicant argues that (i) Sankey does not disclose bitumen separation using "a two stage flash separation process" as defined in the specification, and (ii) Tipman does not teach separation of bitumen (even the froth) into a light overhead fraction and

a heavy bottom fraction, nor does Tipman suggest using a lower paraffin content gas plant diluent, both as required by claim 1.

The Applicant's argument is not persuasive because Sankey uses atmospheric and vacuum distillation units. One skilled in the art would modify Sankey and use a two-step flash separation for a cheaper and simpler operation.

The Applicant argues that Sankey does not teach either separation of claim 1 and Tipman does not teach bitumen separation into two hydrocarbons.

The Applicant's argument regarding Tipman has already been addressed. Sankey teaches separation of bitumen as claimed in claim 1. It is to be noted that the separation has to be chosen between a two-stage flash separation and a gas plant diluent separation. Sankey has discussed option 1 elaborately.

The Applicant argues that because of the failure of the principal references to teach or suggest the invention and because Wu merely suggests a downhole flash similar to Tipman so as to separate the water phase from the bilumen phase, not a separation of the bitumen into a light fraction and a heavy fraction as defined by the claims. Wu does not address treatment of the bitumen or other petroleum liquid product but merely suggests separation of the vapor product into water and light hydrocarbon for re-injection with fresh steam. The skilled artisan is led away from the present invention wherein the light overhead is usable as a product steam such as light crude and the bitumen is used as food. Wu is just the opposite with the hydrocarbon or

bitumen heavy product becoming the product stream and the light overhead re-injected. The flash separations of the claimed invention are not taught or suggested.

The Applicant's argument is not persuasive because Wu reference has not been used to show flash separation of claimed invention. The reference has been used only for its disclosure of using steam to produce bitumen from underground reservoirs in response to claims 12 and 17 (See column 1, lines 16-22).

The Applicant argues that the response concerning Flash Separation argues the obviousness to choose a less exact separation technique but only the inventors' recognition of the ability to use separated bitumen heavy for fuel and, provide the light stream as a crude product (not water separation) suggests using less exact techniques.

The Applicant's argument is not persuasive because, as discussed already, flash separation is obvious over distillation operation.

The Applicant argues that the response concerning Gas Plant Diluent Separation is inappropriate because regarding Wu, fuel cost reduction is not evident as obtained with the invention since Wu re-injects the overhead rather than provides it as a downstream product crude, exactly contrary to the invention.

The Applicant's argument is not persuasive because Wu discloses, "The proportion of light hydrocarbon to steam in the injected mixture may vary from about 1:1 to about 1:100 light hydrocarbon to steam respectively" (Column 3, lines 53-56). "Also, within contemplation of the present invention is the situation where one injection well

serves two or more production wells." (Column 4, lines 53-55). Clearly, "production wells" are producing downstream product crude.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prem C. Singh whose telephone number is 571-272-6381. The examiner can normally be reached on MF 7:00 AM-3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PS/031507

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